Summary of protoDUNE reconstruction meeting

Dorota Stefan (CERN/NCBJ),
Robert Sulej (FNAL/NCBJ)

Summary

- Update on simulation/reconstruction and MC samples from Elizabeth Worcester:
  1. **Geometry** of protoDUNE in G4 has been improved during cosmic muons simulation: material in outer volumes was corrected.
  2. Quick check of **cosmic muons** rate for protoDUNE: 170Hz/m^2, update soon with the use of corrected protoDUNE geometry.
  3. Identifying rate of events that can be used for the calibration studies, such as crossing muons ← *at some point should be coordinated with the full reconstruction.*
  4. Needed work on **optical simulation**: it is copied from FD, successfully runs with protoDUNE geo but the results should be tested.
  5. **Space charge effect** (SCE) simulation: adjustment to E-field used to calculate recombination factor is on the way of being implemented in LArSoft. Interesting studies using MicroBooNE data.
  6. A lots of **MCC samples** available ← *started to be used, new requirements are appearing.*

Summary

- New groups from Europe are interested in both reconstruction and analysis for protoDUNE.
- Many have no experience with LArSoft. For them: *One day LArSoft tutorial* at CERN: https://indico.cern.ch/event/575069/. It will be similar to the one organized by YoungDUNE: https://indico.fnal.gov/conferenceDisplay.py?confId=12889. We react to the suggestions on topics, some participants already active.
- Jiyeon Han started working on hadronic shower for energy scale analysis: aim is to find the way to categorize beam events and find energy calibration dependent on event complexity.

Summary: current activites

- TPC sim/reco productions: MCC7, samples on request.
- TPC detector simulation: progressing.
- Beam events reconstruction: starting.
- Cosmic muon reconstruction: more people needed.
- Beam events with cosmic muon reconstruction: more people needed.

Reconstruction vs measurement tasks:

https://docs.google.com/spreadsheets/d/1qPS5ZwaDtyrMM8GfMvcwoQjyKksz_urL4OMCYYh6yMA/edit#gid=1158465924